DEPARTMENT OF THE AIR FORCE **MAD-001**
OGDEN AIR LOGISTICS CENTER (AFMC) **06 Sept 02**
Industrial Support Services
OO-ALC/MAD
Hill Air Force Base, Utah 84056

CONFINED SPACE ENTRY PLAN

This Master Entry Plan (MEP) covers procedures for members of the Confined Space Entry Team in the Nondestructive Test Aircraft Shop (MADPNB).

1. Confined Space Location: C-130 PDM docks located in buildings 225, 204 and 206, and/or any other approved location where C-130 aircraft maintenance is performed.

2. Description of Fuel Cells/Tank Confined Spaces : The outer wing is comprised of two primary wet cells. Main cells No.1 and No.4 are located behind the aircraft engines. Entry to the No.1 and No.4 wet cells is through four separate rectangular panels approx. 1.5' X 4.0'each. The main tanks are located behind the No.2 and No.3 engines. Entry to the No. 2 and No.3 wet cells is through the No.1 and No.4 engine dry bay panels. The auxiliary tanks are located at the wing root area; tanks dimensions are approx. 9' X 7". The external tanks are located under the wings, panels OWS 81L/R..

3. Tasks/Operations to be performed: Task by PEG. (Table 1.1)

PEG	Tasks	Permit	Hazards	PPE/Control
225CC1 225CC2	**Perform Inspection using Eddy Current or Ultrasonic Equipment**	Required	Oxygen Deficiency	Coveralls, gloves, safety glasses or goggles, and hearing protection. Mechanical air ventilation.
225CC1 225CC2	**OW 11 king pin risers**	Required	Oxygen Deficiency	Coveralls, gloves, safety glasses or goggles, and hearing protection. Mechanical air ventilation.
225CC1 225CC2	**CW 39 center wing front beam**	Required	Oxygen Deficiency	Coveralls, gloves, safety glasses or goggles, and hearing protection. Mechanical air ventilation.
225CC1 225CC2	**CW 22 CW spar caps**	Required	Oxygen Deficiency	Coveralls, gloves, safety glasses or goggles, and hearing protection. Mechanical air ventilation.
225CC1 225CC2	**CW 37 truss to rib cap attach fitting**	Required	Oxygen Deficiency	Coveralls, gloves, safety glasses or goggles, and hearing protection. Mechanical air ventilation.

4. Chemicals Used: No chemicals are introduced to the confined space during eddy current inspection. Refer to current bioenvironmental survey.

Note: NDI inspections are never performed at the same time maintenance is being performed on the aircraft. NDI technicians do not enter confined spaces until oxygen and Lower Explosive Limits (LEL's) are at acceptable levels.

5. Technical Data Required: T.O. 1-1-3, *Inspection and Repair of Aircraft Integral* Tanks and Fuel Cells; T.O. 33B-1-1, *Nondestructive Inspection Methods*; AFOSH STD 91-25, *Confined Spaces*; and the current bioenvironmental survey.

6. Prevention of Unauthorized Entry: Confined space entry point signs will be posted at aircraft site in the direction of the most common approach. Signs will indicate which confined space is being entered. A confined space attendant will be posted by the confined space entry point as a safety measure.

7. Potential Hazards:

7.1. Potential Hazard Description- See the hazards listed in Table 1.1.

7.2. Control of Hazards- All hazards are controlled with methods consistent with the current Bioenvironmental survey, and applicable technical data and standards listed in paragraph 5.

7.3. Entry Permit Requirement- An AF Form 1024, Confined Space Entry Permit, is required for all entries. A permit will not be issued until the confined space requirements and acceptable entry conditions outlined in this MEP, para. 8.1 and 8.2 are met.

8. Entry Procedures:

8.1. Confined Space Isolation Methods (Lockout/Tagout)- Aircraft power must not be applied during confined space entry. Lockout/Tagout procedures will be accomplished in accordance with T.O. 1-1-3, Para. 2-11.1.2.e.(1).

8.2. Acceptable Entry Conditions- Lockout tagout requirements listed in paragraph 8.1. must be complied with. The confined space oxygen level must not be less than 19.5 percent nor greater than 23.5 percent. The confined space shall be purged to 1.5 percent LEL or less and continuously air purged and monitored Dry bays must be entered to access the #1 through #4 fuel cells. When the access panels are removed to facilitate entry the dry bays will be considered an extension of the fuel cell being entered and must be considered as part of the confined space. Fresh air ventilation must be maintained throughout confined space entry. The availability of emergency rescue must be confirmed.

8.3. The attendant will place the entry permit at the nose of the aircraft.

8.4. **Tank Purging**- Tanks will be continuously air purged while authorized personnel are in the confined space.

8.5. Tank Ventilation- Confined spaces must be continuously fresh air ventilated. If

mechanical ventilation is interrupted the confined space attendant will command the entrant to exit the space immediately**.** The confined space attendant will send the runner to call MA Control at 7-2182 to advise them of the mechanical ventilation interruption and for MA Control to contact AGE.

9. Confined Space Entry Team Responsibilities

9.1. Entry Supervisor: Personnel identified as the entry supervisors and/or alternates will:

9.1.1. Maintain a copy of this MEP.

9.1.2. Issue entry permits consistent with this MEP.

9.1.3. Revoke the permit and contact MAD Safety, who will in turn contact MAB Safety when entry conditions are not consistent with this MEP.

9.1.4. Determine if acceptable conditions are present at the permit space when entry is planned.

9.1.5. Ensure a qualified person (trained in the operation of direct-reading oxygen, flammability, and toxicity monitoring equipment) evaluates the space for safe atmospheric conditions.

9.1.6. Ensure entrants are properly trained and qualified in equipment operation, emergency evacuation procedures, and personal protection equipment (PPE) use.

9.1.7. Ensure personnel who are ill or on medication that may affect their ability to safely perform assigned tasks, are excused from the operation.

9.1.8. Brief entrant(s) on entry hazards.

9.1.9. Inspect the work area, tools, and equipment to ensure they are free of hazards.

9.1.10. Select the PPE consistent with current PEG survey.

9.1.11. Ensure lockout tagout procedures and entry conditions meet the guidelines outlined in applicable directives.

9.1.12. Ensure all equipment required to meet NDI related tasks and to execute emergency rescue procedures are operational and readily available.

9.1.13. Determine the availability of the Fire Department Rescue team during the time of entry by calling 75ABW/CEF at 7-3021/22.

9.1.14. Ensure permit accuracy and completeness prior to entry authorization; signs and dates permit upon review.

9.1.15. Cancel entry permit when conditions are no longer acceptable.

9.1.16. Never allows entry into an immediate danger to life or health (IDLH) atmosphere.

9.1.17. Establish a system for controlling entries.

9.2. Attendant:

9.2.1. Responsible for monitoring the entry area and maintaining effective communication with the entrant(s). Must be able to summon help in case of an emergency.

Note: Do not attempt emergency rescue involving entry. Provide all possible support without entering the fuel cell or dry bay until the rescue team arrives. Attendants will have the authority to order entrants to exit the space at the first indication of an unexpected hazard.

9.2.2. Comply with all requirements of the entry permit.

9.2.3. Limit entry only to those authorized.

9.2.4. In the event of an emergency, order the evacuation of the confined space and send a runner to notify emergency response personnel

9.2.5. Order evacuation of tank, as necessary, and remain at the attendant's post and not leave for any reason except self-preservation unless replaced by an equally qualified person

Notes:

1. If an attendant is monitoring more than one entry, all entrants must be ordered to evacuate the spaces in the event of any emergency in any of the spaces. (Ref T.O. 1-1-3, para 2-11 1.2c.)

2. The attendant may assist the entrant in self-rescue only when assistance can be rendered without breaking the plane of the confined space entry.

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9.3. Entrant:

9.3.1. Must understand all safeguards and emergency egress/rescue procedures associated with the entry.

9.3.2. Alert attendant of changes in condition.

9.3.3. Respond immediately to the attendant's evacuation orders.

9.3.4. Review the permit prior to entry ensuring acceptable conditions exists.

9.3.5. Notify the entry supervisor when additional hazards, not identified in the MEP, are found.

9.3.6. Notify the entry supervisor when ill or on medication.

9.3.7. Wear appropriate PPE listed in Paragraph 11.

9.4. Spotter/Runner: The designated runner is responsible to make emergency calls and perform other emergency tasks as directed by the attendant.

9.4.1. If a radio transmitter is used, confirm its operating range from the confined space area. Ensure radio and cell phone transmissions are not conducted inside the fuel safety zone. The radio and cell phone will be maintained at the distance required by the safety zone from the open fuel cells until they are purged and maintained at an entry safe LEL. Communication equipment design and Hazard Class will be IAW T.O. 1-1-3 Section III

10. <u>Training</u>: All members of the confined space entry team (i.e., entry authorizing supervisor, entrant, attendant and runner) will receive the following training:

Course	Frequency	Trainer	Documentation
Course 0523 Confined Space Generic	Initial	MAWH	AF Form 55
Fuel System/Tank Familiarization Course	Annual	Supervisor	AF Form 55
C-130 Aircraft Confined Space Specific Course	Annual	MAB	AF Form 55
Site Specific Training	Annual	Entry Supervisor	AF Form 55
Confined Space Awareness Briefing	Initial and Annual	Supervisor	AF Form 55
Atmospheric Tester Course	Annual	MA	AF Form 55

10.1. Confined space rescue will be practiced once a year by means of simulated rescue operations in which they remove a manikin or actual person by the Hill AFB Fire Dept.

11. <u>Entry equipment and PPE</u>:

11.1. Eddy current equipment:

Nortec 2000D, Eddy Current
S/N 1413F051566, P/N 9020210.03
S/N 1475G032088, P/N 9020210.04
S/N 1475G052197, P/N 9020210.04
S/N 1475G052230, P/N 9020210.04
S/N 1475G052231, P/N 9020210.04
S/N 1475G052254, P/N 9020210.04
S/N 1475G052260, P/N 9020210.04

11.2. Ultrasonic equipment

USN-52R, Krautkramer Branson, Ultrasonic
S/N 00NDH7
S/N G191347

11.3 Atmospheric testing equipment, Portable Multi-Gas Detector

11.4. MA-1 Blower with the required filter to prevent the blower from picking up sand, dust, and dirt. Filters in the assembly should be cleaned and replaced as required. Blowers will be requested and delivered to the work site by the AGE Contractor.

11.4.1. The blowers will be placed, and bonded to aircraft as required by T.O. 1-1-3, paragraph 2-12.2 and 8-7.3. A complete approved equipment listing is found in T.O. 1-1-3 Table 8-1.

11.5. White static free, no pockets, velcro closure or non sparking buttons coveralls; issued from Bldg. 225 tool crib.

11.6. Nitrile Gloves.

11.6. Safety glasses and/or goggles.

11.7. Hearing protection as required by the current Bio survey.

11.8. Confined Space signs; located at maintenance docks. Signs will be placed at aircraft site during entry. Signs will indicate the space being entered.

12. Testing: Atmospheres in confined spaces will be tested and documented by the confined space entry team. Testing procedures will be IAW with equipment manufacturer instructions. Testing results will be documented on AF Form 1024, Confined Space Entry Permit.

12.1. Personnel performing atmospheric tests must be trained and certified on testing equipment being used. Training will be documented on the employee's AF Form 55.

12.2. Testing will be accomplished for oxygen levels first, and then LEL content. Testing sequence is important, as the tester will not display proper LEL if the oxygen level is out of limits.

12.3. Concentration of toxic materials will be evaluated during the annual bioenvironmental survey and/or when new NDI related tasks are added to this MEP.

12.4. Testing will be accomplished.

12.4.1 Prior to starting the ventilating air.

12.4.2. After air has been turned on and monitored throughout confined space entry.

12.4.3. Before re-entry, after the space has been vacated i.e., shift change, lunch and/or breaks.

12.4.4. If ventilating air has shut down.

Note: Each time the space is tested the results and times will be recorded on AF Form 1024.

13. Communications and Observation: The attendant will communicate with the entrant verbally. In case of emergency, the attendant will give the command to the runner to call the Hill Fire Department Rescue at 911 on a Base phone. A cell phone or radio transmitter may only be used in an area with a non-explosive/non-flammable atmosphere. Call 777-1911 when using a cellular phone. The runner must be able to provide the aircraft dock location and nature of the emergency to the 911 operator. Upon rescue team arrival, the runner will direct the team to entrant's location.

14. Emergency Rescue: The 75 ABW/CEF provides rescue support for all confined space entries.

Note: The entrant and attendant will be aware of symptoms requiring the immediate evacuation of the entrant from the confined space . These include, but are not limited to headache, dizziness, weakness, loss of coordination, or inability to respond to verbal communication or exit orders. The entrant will respond to exit commands given by the attendant at any time during entry.

14.1. If a command to exit is given and there is no response, or if a verbal communication cannot be established, or the entrant is otherwise incapacitated the attendant will summon the runner who will immediately alert the Base Fire Department Emergency Rescue. See paragraphs 9.4.1 and 13. for emergency rescue notification procedures. The attendant will remain at the entry post and must never enter the confined space.

14.2. Personnel in the area will be directed by the attendant or runner to move support equipment out of the way and place a stand or JLG scissor lift for the rescue team to ease access to entry point. Hangar doors will be open to allow unobstructed entry by the Fire Department.

14.3. The attendant will remain at the entry post until released by the Fire Department rescue team.

14.4. Cutting of openings is authorized if Fire Department Rescue Team requires greater access in order to reach an entrant.

14.5. The 75 ABW/ CEF will be provided a copy of this MEP to facilitate training and rescue plans.

14.5.2. Confined space rescue will be practiced once a year by means of simulated rescue operations in which they remove a manikin or actual person. Practice will be coordinated with MAD Safety.

15. Contractor Interface: Contractors must be informed that work is to be performed in a

permit required confined space. Insure information is included in the statement of work. The contractor must be briefed on the contents of the AFOSH Standard 91-25 Chapter 7 and OSHA 29 CFR 1910.146 (a)(8).

16. Permit Routing and Control:

16.1. Copies of canceled and/or completed permits will be provided by authorizing authority to the MAD Safety. The permits will be maintained for a period of one year from date of entry.

16.2. The MAD shop supervisor will keep a copy of entry permits for a period of one year from date of entry.

17. MEP Amendment: The MEP must be reviewed annually or when changes are required. Changes and/or amendments to this MEP must be coordinated with the Entry Authority, OO-ALC/ MAD Safety, 75 AMDS/SGPB, 75 ABW/CEF and OO-ALC/SEG.

18. <u>Coordination</u>:

_____	_____
OO-ALC/MADPNB	Date
_____	_____
OO -ALC/MADP	Date
_____	_____
OO-ALC/MAD Safety	Date
_____	_____
OO-ALC/SGPB	Date
_____	_____
75 ABW/CEF	Date
_____	_____
OO-ALC/SEG	Date

Confined Space Entry Authorization

The following personnel of the Nondestructive Test Aircraft Section/MADPNB are authorized to approve and sign confined space entry permits for work to be performed in the C-130 fuel cells/tanks as listed in item 1 of this Confined Space Master Entry Plan MEP MAD-001.

Name	Org	
Merritt, Douglas	MAD	Primary
Sherwood, Steve	MAD	Primary
Hatch, William	MAD	Primary
Peek, Larry	MAD	Primary